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**Abstract:**

*This paper presents research-in-progress examining metateams in major Information Technology projects. The empirical research focuses on client project teams interacting with other teams, internal or external to the organisation, in the mix of traditional, virtual, and commercial environments that constitute today's reality of major IT projects. The paper describes the research approach and its contribution to both IS practice and scholarly research in an area where limited empirical research has been conducted. The careful selection of the foundation case and the rich data extracted from it present a solid base for the subsequent phases of the research.*

**Keywords**

Metateams, IS Project Management, IS Project Teams, IS Implementation, Globalisation, Human Behaviour, Virtual Teams, Empirical Research.

## INTRODUCTION

Modern organisations exist in a paradigm of relentless change, using knowledge workers as an asset, operating and competing globally, capitalising on networked cross-specialisation to create value and shared learning, and depending on their teams to get to the market first (McDermott et al., 1998). Within these organisations, information technology (IT) projects are more interesting, complex and demanding than ever. New IT solutions must be implemented at a frantic pace and the risks are consequently higher (Yourdon, 1997; Yourdon, 2000).

In this environment, many IT projects are performed by *metateams*. A metateam is a loose confederation of teams linked by interdependencies and commercial agreements. We can think of metateams as a type of virtual team, where each participant team is working with other teams across distance, organisations, and cultures. Achieving effective collaboration in metateams is critical and difficult. The Internet based technology enabling these teams adds a virtual component to human relationships affecting the level of conflict and trust among teams and team members (Jarvenpaa, 1998; Jarvenpaa and Leidner, 1999; Cascio, 2000; Kankanhalli et al., 2000). However, the virtual nature of the interteam communication is not the only obstacle, collaboration can be jeopardised by lack of a common understanding of prime objectives and deficient pre-project arrangements (Jiang; Klein et al., 2000); poor understanding of cultural differences (Hofstede, 1997; Trompenaars, 1998); and, interpersonal communication deficiencies, changing organisational environment and inadequate leadership style (Atwater and Bass, 1994).

The commercial nature of the relationship among teams must also be considered. In the corporate environment, IT outsourcing is a pervasive and significant arrangement affecting project outcomes. Yet, outsourcing is not always successful. The success of any type of IT outsourcing depends on the ability of vendors to provide the quality of service required by clients and the ability of clients and vendors to build a partnership based on these relations (Grover et al., 1996). However, partnership is difficult to achieve—as outsourcing vendors are not real partners because profits motives are not shared (Lacity and Hirschheim, 1993)—and difficult to sustain (Willcocks et al., 1995).

Modern IT project management requires attention to multiple variables; no single answer can be comprehensive enough. In spite of that, existing research in the area typically uses pre-existing and sometimes simplistic models to assess a new and complex reality by testing only a few hypotheses (often with teams of students).

This paper presents research in progress that takes a different approach to the above: exploring and extracting experiences directly from teams of professionals working for a telecommunication corporation on major IT projects. These teams interact with other teams, internal or external to the organisation, in the mix of traditional, virtual, and commercial environments that constitute today's reality of major IT projects.

## RESEARCH DESCRIPTION

### Research Purpose and Focus

The prime purpose of this program of research is to contribute to the body of knowledge by presenting a substantive theory of metateams focused on the issues confronted by client teams and the strategies they use to resolve their conflicts. The study concentrates on client project teams working with vendor teams in an IT outsourced environment and it uses a grounded theory design to allow patterns to emerge.

The concept under study is generally defined as an exploration of metateams and will present a grounded theory of metateams that is based on the following question: *How do client project managers and their teams resolve the conflicts emerging from their projects?* Grounded theory is defined as theory inductively generated from empirical data systematically obtained and analysed during the research process using a constant comparative method (Glaser and Strauss, 1967; Glaser, 1978; Glaser, 1998).

### Preliminary Considerations

Three considerations influenced the design of the study:

(a) Many of the reviewed studies of virtual project teams failed to include the complexities of a real organizational environment; they totally ignored or oversimplified the project team context. Such strategy runs the risk of producing an incomplete picture of virtual project teams.
(b) Obtaining a good appreciation of temporal processes is a critical requirement when researching new organizational phenomena or studying innovation (Van de Ven and Poole, 1989). To achieve this, we must set the research in its social and historical context (Klein and Myers, 1999) and include the role people have as active builders of their own physical and social reality (Orlikowski and Baroudi 1991).
(c) Klein and Myers (1999:73) noted that the positivist account of history studies "the way the organization has been in the past, but then presume that patterns observed in the past will repeat themselves in the future." We believe that there is risk in assuming that experiences of the past can be successfully applied to new social and economical structures. This risk can be mitigated by an inductive research approach.

Recognising the need for a different approach, this study seeks the generation of empirically valid theory by exploring the new phenomena and its players in non-simulated environments. The intention is "to discover what is going on, rather than assuming what should go on" (Glaser, 1978:159).

### Approach

The research methodology adopted is that of grounded theory (Glaser and Strauss, 1967) and follows the steps suggested by Eisenhardt (1989) for theory building from case study data. Grounded theory is a general methodology that accepts the combination of quantitative research methods and qualitative research methods (Glaser and Strauss, 1967; Glaser, 1978; Martin and Turner, 1986; Glaser, 1998). This approach presents an advantage in the quest to understand the concept being explored (Creswell, 1994) and contributes to control potential bias and distortions in the narratives of the participants (Klein and Myers, 1999).

### Grounded Theory

Grounded theory has grown in importance and recognition over the years based on the early work of Glaser and Strauss (1967). The focus of grounded theory is to develop inductive theory from data. This is achieved through incremental and systematic progression in knowledge, deriving conceptual deduction and hypotheses, then testing those hypotheses with both the grounded data and extant theory. In grounded theory everything is integrated, it is an extensive and systematic general methodology where an action can be connected with other actions and nothing happens in a vacuum (Glaser and Strauss, 1967; Glaser, 1978). As a result, grounded theory allows the identification of patterns in data. By analysing these patterns researchers can derive theory that is empirically valid (Glaser and Strauss, 1967; Martin and Turner, 1986).

Because grounded theory is a general method of analysis, it accepts qualitative, quantitative and hybrid research methods like surveys, experiments, and case studies (Glaser, 1978). This study uses the methodology with a hybrid mix of data from multiple sources including surveys, documents, direct observations, and interviews taking care to maximise the differences between cases as suggested by Glaser and Strauss (1967:49-60).

A good example of grounded theory in IS research is the award winning paper from Orlikowski (1993). Grounded theory allowed Orlikowski to focus on contextual and processual elements as well as the action of important players associated with organisational change. The detailed results allowed for analytic generalisation of concepts and patterns as suggested by Yin (1994). Orlikowski (1993:310) further extended the generalisation

by "combining the inductive concepts generated by the field study with insights from existing formal theory, in this case from the innovation literature (a strategy recommended by Glaser and Strauss, 1967)."

**Case Studies and Grounded Theory**

Benbasat et al. (1987) suggest three main reasons to use a case study strategy in IS research: a) the research can study IS in a natural setting, learn the state of the art, and generate theories from practice; b) the researcher can answer the questions that lead to understanding the nature and complexity of the processes taking place; and, c) it is an appropriate way to research a previously little studied area. Thus, a case study approach is particularly appropriate for this research when used within a grounded theory methodology.

Eisenhardt combined grounded theory and case study methodology to generate theory based on emerging empirical data. Figure 1 presents the eight steps suggested by Eisenhardt (for detailed information, see Eisenhardt, 1989). This roadmap for building theory from case study research can be transferred to the context of project teams; however, the driving methodology is clearly grounded theory (Glaser and Strauss, 1967; Glaser, 1978; Glaser, 1998). In this research, case studies are used in the same manner Orlikowski (1993) approached field studies—during the early phases the research is more open-ended while subsequent stages are directed by emerging concepts, paying attention to relevance and theoretical purpose using Glaser and Strauss' (1967) technique for theoretical sampling (Orlikowski, 1993).

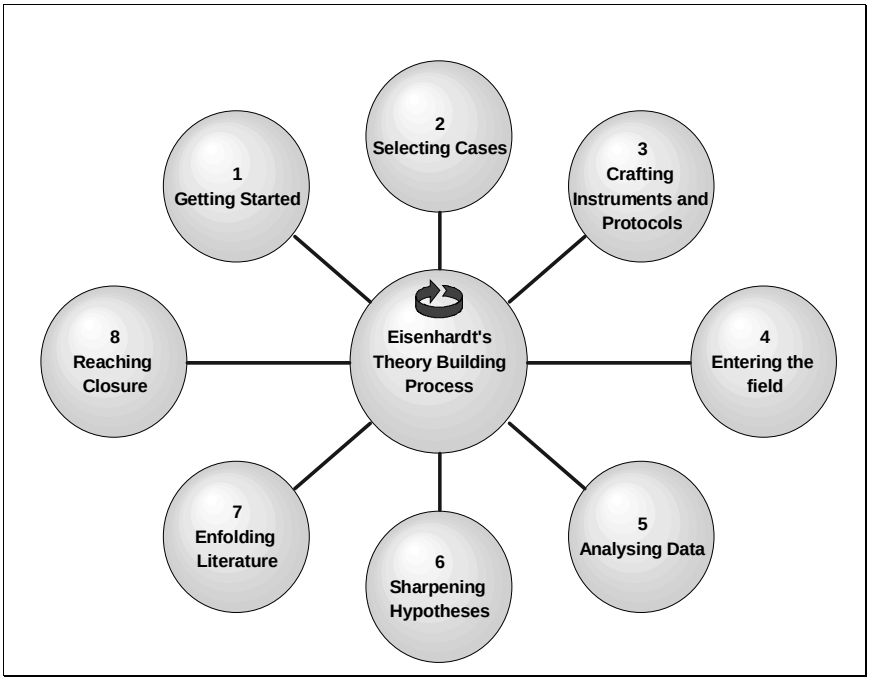


Figure 1: Eisenhardt's (1989) steps in the theory building process from case studies.

## SIGNIFICANCE OF THE STUDY

Research in virtual project teams in IS has been minimal and sometimes oversimplified in nature. Many researchers used teams of students to test hypotheses (Jarvenpaa and Leidner, 1999; Kankanhalli; Tan et al., 2000; Piccoli and Ives, 2000; Sarker et al., 2000; Sivasubramaniam et al., forthcoming). These studies of virtual teams did not include metateams, teams of teams interacting across distance and frontiers (geographical and/or organisational). This research focuses on metateams and is being conducted in a corporate environment, with real teams and real projects, allowing for all the complexities of managing strategic IT business initiatives to emerge. In meeting its key research objectives, this study will provide the following benefits:

(a) Theory from this study will present a new, different, or more advanced theory of virtual project teams; therefore, contributing to scholarly research by advancing the knowledge in an area where limited empirical research has been conducted. This project also aims to:
   (i) contribute with empirical research to theories previously tested under limited conditions (i.e., prepositions tested with teams of students);
   (ii) provide further ideas for the advancement of research in this domain.

(b) The new content will result in practical frameworks or guidelines easy to incorporate into the project management body of knowledge and practice and contribute to:
   (i) helping a client organisation to deal effectively with the issues discovered, and thus reducing risks of failure and cost overruns;
   (ii) providing ways of assessing new situations in the light of models empirically generated, and thus increasing the efficacy of project managers; and,
   (iii) helping vendor organisations to understand the issues faced by major projects from the perspective of their clients.

## FOUNDATION CASE

Choosing the foundation case is of particular importance when following a grounded theory paradigm. It cannot be a simplified version of future steps. It must be a real and complex case, accounting for the actions in a substantive area, because the emergence and relevance of the concepts depends on the existing problems in the area under study (Glaser, 1998). Therefore, the often-used term "pilot case" can be misleading. A more appropriate name is "foundation case" (Lehmann, 2001:89). This is so because the first case, while allowing for fine-tuning research instruments, techniques, and protocols, has the key role of providing the first round of data in the iterative and inductive process of theory building.

The foundation case was selected from a population of IT projects in a large telecommunication corporation. This will allow control of environmental variation while clarifying the domain of the research (Pettigrew, 1988). The selection of cases, however, is not a random selection, Eisenhardt (1989:537) states that "the goal of theoretical sampling is to choose cases which are likely to replicate or extend the emergent theory."

The initial unit of analysis is the client's core project team comprising the project manager and the associated team leaders. The decision to include the team members was based on the need to obtain a wide range of views from the people confronting the day-to-day issues. This approach recognises the polyvalent nature of human perception and its inbuilt bias. The views from "the floor" provide a different perspective and moderate management bias (as preliminary data shows).

### Selecting The Foundation Case

As indicated, the foundations case is a critical building block for the study; it must supply a rich source of data for in-depth analysis, which results in provisional hypotheses for further comparison and testing. To ensure the fit of the case to the purpose of the study, the characteristics of the team and the project were specified as follows.

The client project team:

(a) Has a critical role in implementing the IT initiative.
(b) Deals with at least one autonomous team working from a different location.
(c) Has a visible level of interdependence with the autonomous team(s)—i.e, deliverables of one team are inputs to other team.
(d) Works under an IT outsourcing/contractual agreement where at least one other team belongs to a vendor and reports directly to a manager external to the client.
(e) Has a high reliance on electronic media (e-mails, phone/video conferencing) to communicate with other teams or team members.

The IT project:

(a) Is considered as "major" or "strategic" by the client organisation.
(b) Presents high level of complexity—this can be reflected in the project's technical complexity, rapid development strategies, multi-site development and implementation, or multi-vendor interaction and coordination.
(c) Is subject to specific and defined commercial arrangements with defined deliverables.

The selected project, from hereon called "SUN", offers an excellent fit with all of the above requirements, providing a very rich and complex project environment for analysis. The results from the initial data analysis will be available for presentation at ACIS 2001.

**Project Description**

SUN is a strategic major project with a cost greater than 12 million Australian dollars. It has an ambitious delivery schedule requiring the coordinated effort of people working from sixteen locations, two of which are overseas, one in Eastern Europe and one in the Middle East. To achieve its objectives, SUN requires the collaboration of three different organisations (one of them located overseas) working under two independent commercial agreements, with one organisation being the link between the other two. This is a project of high complexity and as such it demands high degrees of technical and management skills (Donaldson, 1978; Thite, 1997).

The client project team is responsible for the delivery of the project and the coordination of work related to the IT infrastructure and modification of interfaces. The new system must integrate seamlessly with the organisation's existing IS architecture. The performance of the system in terms of response, availability and operational quality is critical to the client's core business of telecommunication network management.

The implementation of the system requires changes to business processes. SUN limits the previously unimpeded ability of "super-users" or "super-techs" to access the network while increasing the level of access surveillance and logging. While network security personnel were advocates of SUN the "super-techs" were less than enthusiastic about the project and yet key subject matter experts. Their opposition was at times overt but often covert.

The pre-project agreement limited the way project managers on the different organisations could cooperate. While the vendor was interested in fulfilling the letter of the agreement, the client was interested in fitness-for-purpose. These two objectives were often at odds, driving the project toward different and incompatible outcomes resulting in conflict, mistrust, and overt antagonism between the teams and even within teams.

**The Data**

To benefit from the data richness offered by the foundation case, the researcher conducted a number of data gathering activities.

- **Surveys**—Two surveys, based on Bass and Avolio's (1994) Full Range Leadership Model, were conducted to measure the project's leadership behaviours: the Multifactor Leadership Questionnaire for Teams[1] (MLQTeam) and the Multifactor Leadership Questionnaire[1] (MLQ). The first survey was used to provide an early benchmark of the team's leadership behaviour, to introduce the research project to the team and to provide useful background information for subsequent interviews. The second survey provided a 360-degree measurement of the project manager's leadership behaviours; it also acted as a benchmarking tool and was effective in increasing rapport with the project manager. The surveys also allowed the researcher to enter the field with a contribution to the participants (the MLQ reports). This was very important in generating rapport and cooperation.

- **Interviews**—Interviews are the base for the research, providing the data for open coding and leads for further investigation. A number of semi-structured interviews were conducted at three levels. The project director described his general involvement in the project and instances when he acted upon issues escalated to his level. The project manager was interviewed in regards to the team, his own leadership approach, success barriers, conflict resolution, and the project in general. Team members provided their view of the team, the project, their relation with other teams, and the issues they were facing. The interviews focused on interteam issues confronted by the participants while remaining open to other aspects emerging as significant. All interviews were recorded, transcribed and analysed in detail to detect patterns.

- **Project Documents**—A CD was burnt with the 467 project documents produced since the beginning of the project. These files required sorting to facilitate their inclusion into the study. Given the research question, one could assume that relevant documents are those related to behavioural aspects; for example, the behaviours agreed by the team at the beginning of the project, stated expectations, issues and disagreements between the teams. However, due to the nature of the grounded theory research, where emerging concepts

[1] © Bass and Avolio 1996

drive data acquisition and analysis, it is impossible to decide a priori the relevance or otherwise of a particular document.

- **Emails**—A preliminary quantitative analysis of emails was produced with the correspondence to and from the project manager. The ten-month period provided a picture of the flow of communication and also showed clues to the players' communication styles. A second CD was burnt in July 2001 containing the project manager's emails for the next eight months of the project. Whilst the volume of emails is high (more than 3500 emails), only those emails relating to emerging concepts will be included for further analysis.
- **Direct Observations—**Direct observations provided useful additional information as suggested by Yin (1994). These observations were made during several visits to the site, attendance at project team meetings, informal 'lunch room' conversations, and attendance at two conflict resolution workshops between the client and the vendor teams (the first on technical issues and the second on managerial aspects).

## LIMITATIONS

Several factors in this study may contribute to decrease the generalisability of its findings; for example, its "client" perspective, the type of projects examined, or the outsourcing environment. However, the objective of the research is not to provide statistical validation and universal generalisations but to discover patterns and develop theories for a better understanding of the subject under investigation (Creswell, 1994:4). As Yin (1994:10) states, "case studies, like experiments, are generalizable to theoretical propositions and not to populations or universes". Also, validating emerging models against extant theory in accordance with the grounded theory paradigm will increase the generalisability of findings.

Another potential limitation is due to the nature of qualitative methods; as the observations are presented from the particular perspective of the researcher, the findings could also be subject to different interpretations (Wolcott, 1994). This will be mitigated by adherence to the research method and rigour, diversity of data sources, appropriate level of triangulation, and by comparison of convergent and divergent cases and theories (Glaser, 2001).

## CONCLUSION

The use of metateams in IT development brings promises of emancipation from some of the physical limitations of the past. However, IT projects involving metateams also bring new challenges to their project managers. When not effectively managed, these challenges are causes of high levels of miscommunication and conflict resulting in partial or total project failure.

More work is required to understand the nature of conflict and how conflict is resolved in metateam environments. The data analysed so far indicates the existence of important variables like pre-project agreements, trust, communication, dissonance of objectives, power strategies, and the perception of negative impact of rewards in the overall success of the project.

We are at the beginning of a fascinating journey. This research presents a great opportunity, allowing us to visit the realm of major projects and metateams to explore a complex and conflictive environment. This exploration will result in a substantive theory of metateams based on rich data extracted from a corporate environment. We believe this field is as rich as it is under explored. Our vision is to produce a substantive theory that will be able to be combined with other substantive theories in an effort to progress towards developing a formal theory of metateams.

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